REMARKS

Claims 1-22, 24-28, and 30-41 are pending in the present application. In the above amendments, no claims have been amended, cancelled or added. Applicant believes that the present application is in condition for allowance, and respectfully requests reconsideration of the rejection in light of the remarks set forth below.

I. ALLOWABLE SUBJECT MATTER

Applicants gratefully acknowledge the notification of allowable subject matter in claims 5-6 and 11-13.

II. CLAIM REJECTIONS UNDER 35 USC § 102

Claims 1-4 and 7-10 have been rejected under 35 U.S.C 102(b) as being anticipated by Rich (U.S. Patent No. 5,940,452) – hereinafter "Rich".

Applicants respectfully traverse the rejection in its entirety.

Claims 1 and 7

As to independent claims 1 and 7, the Office Action alleges that in Figure 7, Col. 22, line 15 to Col. 24, Rich teaches "*a receiver [702], including a plurality of receiver chains [126 and 706] adapted for processing in the receiver, for receiving a pilot channel and determining a channel condition of said pilot channel*" and "*a control system [108] for controlling receive diversity of said receiver [126 and 706] by selecting a number of said plurality of receiver chains based on said determined channel condition.*"

In Figure 7, Rich discloses a controller 108 that is configured to selectively receive signals from just one of two receivers 126 and 706. That is, the controller 108 selects only one of the two receivers 126 and 706 via switch 708. "The control signal 722 controls whether the demodulated signal at line 140 from the first receiver 126 or the demodulated signal at line 714 from the second receiver 706 is routed to the controller at line 724." (Col. 22, lines 49-52). Consequently, Rich teaches a diversity 'selection' scheme where the controller 108 selects the

best receiver from the two receivers 126 and 706. Such diversity 'selection' is distinct from the present invention which claims receive 'diversity control'. In the claimed 'diversity control' scheme, the controller does not merely select a receiver (as in Rich), but rather controls the diversity of the receiver by utilizing a number of receivers. That is, the number of receivers utilized (selected) by the controller is varied depending on the determined channel condition. Thus, rather than selecting just one of the receivers, the controller intelligently selects a greater or a fewer number of receiver chains based on the determined channel condition to maintain a desired channel reception quality. This is a significant distinction in between the claimed system architecture and the cited prior art. By controlling the number of receiver chains that are utilized at any one time, the present claim invention can control a desired channel condition quality as well as restrict the amount of power consumed for signal reception (i.e., more receiver chains consume more power, fewer receiver chains consume less power). The cited prior art does nothing to either control received channel condition or power consumption since it does not vary the number of receivers used at any one time. Rich merely selects between two channel conditions (in receivers 126 and 706). Such selection between two received signals having associated channel conditions does nothing to actually control the overall receive channel diversity (i.e., select a number of receiver chains to achieve a desired channel diversity).

Additionally, the remaining embodiments of Rich fail to teach the claimed diversity control scheme. For example, Figures 8-10 of Rich teaches a receiver that selects between two receivers, where each receiver receives a signal modulated by a different modulation method (e.g., digital modulation and analog modulation). (Col 23, lines 28-31). Thus, such receiver is configured for selection between different signal modulations and not for diversity control by selecting greater or fewer receiver chains as claimed.

Claims 2 and 8

As to dependent claims 2 and 8, the Office Action alleges that Rich teaches the "*control system is configured for reducing said number of selected receiver chains when said determined channel condition is above a first channel condition threshold.*" The Office Action cites Figure 2, steps 202, 204-206, as teaching this limitation. However, Figure 2 of Rich only teaches selection between two antennas that are coupled to a common receiver 126. In the cited example

of Rich, just a single receiver 126 is contemplated. A "reduction" of the number of selected receiver chains would mean disassociating the receiver 126 from the system in Rich, thus making the whole system inoperable. Rich does not reduce the number of receiver chains as claimed, it only selects between antennas 114 and 116. By contrast, Figure 2 and paragraph [0026] of the present invention describes that in RF/IF systems 290A and 290B, each is considered to have a receiver chain. The present claimed invention adds or removes receivers 290 according to the channel conditions. Thus, the claimed "receiver chains" are distinct receivers and not just the antennas 114 and 116 disclosed by Rich. Consequently, the cited prior art fails to teach this limitation.

Claims 3 and 9

As to dependent claims 3 and 9, the Office Action alleges that Rich teaches the "*control system is configured for increasing said number of selected receiver chains when said determined channel condition is below a second channel condition threshold.*" The Final Office Action fails to cite any Figure or section of Rich to support this rejection. However, as discussed above with relation to Claims 2 and 8, Rich only selects between antennas 114 and 116 coupled to a common receiver 126. Rich does not increase the number of receiver chains as claimed. By contrast, Figure 2 and paragraph [0026] of the present invention describes that in RF/IF systems 290A and 290B, each is considered to have a receiver chain. The present claimed invention adds or removes receivers 290 according to the channel conditions. Thus, the claimed "receiver chains" are distinct receivers and not just the antennas 114 and 116 disclosed by Rich. Consequently, the cited prior art fails to teach this limitation.

Claims 4 and 10

As to Claims 4 and 10, the Office Action asserts the rejections noted for claims 2, 3, 7, and 8. However, as noted above, Rich fails to teach "receiver chains" as claimed. Particularly, the antennas 114 and 116 in Figure 2 of Rich are not the claimed "receiver chains" as specified in the present application.

III. CLAIM REJECTIONS UNDER 35 USC § 103

Claims 14-22, 24-28, and 30-41 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Rich (U.S. Patent No. 5,940,452), in view of Willey (U.S. Patent No. 6,505,058).

The Office has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787 (Fed. Cir. 1984). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art references must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Third, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

Claim 14

As to independent Claim 14, the Office Action alleges that Rich in view of Willey teach the claimed limitations.

Applicant traverses this rejection in its entirety.

Claimed Elements are Not Taught by the Prior Art

The Office has the burden to show that the prior art included each claimed element. Applicants submit that Rich and Willey fail to teach "*determining receive diversity at a receiver*

of said mobile station by determining a number of a plurality of receiver chains of said receiver for receive diversity based on said determined channel condition" and "*determining a first data bit of said QPCH received at said mobile station in accordance with processing of one or more signals produced based on said determined receive diversity.*"

The Office Action relies on Rich as teaching "*determining receive diversity at a receiver of said mobile station by determining a number of a plurality of receiver chains of said receiver for receive diversity based on said determined channel condition.*" However, as discussed above with regards to claims 1-4 above, Rich only teaches selecting between antennas 114 and 116 coupled to a common receiver 126. Rich does not use a 'plurality of receiver chains' as claimed. In Figure 2 and paragraph [0026] of the present invention describes that in RF/IF systems 290A and 290B, each is considered to have a receiver chain. Thus, the claimed "receiver chains" are distinct receivers and not just the antennas 114 and 116 disclosed by Rich.

Additionally, Rich does not teach "*determining a number of a plurality of receiver chains of said receiver for receive diversity.*" Rich teaches a diversity 'selection' scheme where the controller 108 selects the best receiver from the two receivers 126 and 706 (Figure 7). Such diversity 'selection' is distinct from the present invention which determines a number of receiver chains to use to achieve a desired receive diversity. As claimed, a single receiver chain is not merely selected (as in Rich), but rather a number of receiver chains are determined to achieve a desired channel condition. This is a significant distinction in the way the claimed system operates in comparison to the cited prior art.

The Office Action relies on Willey as teaching "*determining a first data bit of said QPCH received at said mobile station in accordance with processing of one or more signals produced based on said determined receive diversity.*" The cited sections of Willey teach

decoding of a conventional QPCH paging message. Willey does teach that such first data bit of the QPCH may be obtained based on the determined receive diversity. According to Willey, ascertaining the meaning of a QPCH bit is based on the received power for the QPCH bit time period and spreading code. (Col. 5, lines 57-66). Consequently, Willey relies only on power and fails to consider receive diversity for the QPCH bit as claimed.

Therefore, Rich and Willey fail to teach the recited limitations.

No Motivation to Combine Cite References

Assuming, *arguendo*, that every claimed element is taught by the prior art, Applicants further submit that there is no motivation to combine Rich and Willey as alleged in the Office Action.

The Office has the burden to show that one of ordinary skill in the art could have combined the elements claimed by known methods, and that in combination, each element would have merely performed the same function as it did separately. "In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

The Final Office Action states that the suggestion/motivation for combining the teachings of the cited references would have been "to provide a mobile station a capability of using a single bit message of QPCH, transmitted from the base station, based on a determined diversity to indicate a mode in such a way a mobile can configure itself to sleep mode or not in accordance with the data bit in order to save its battery power within a single charge." This

reasoning appears to improperly rely on the Applicants' teachings. No independent reason has been provided whereby the teachings of Willey would be combined with those of Rich. While both prior art references Rich and Willey teach various embodiments, there is no objective reason why a person of ordinary skill in the art would choose to combine the claimed elements from among all possible other combinations. Techniques for receive diversity control/selection (Rich) are distinct from QPCH page decoding techniques (Willey). There is no objective reason found in the cited prior art why such different techniques would be combined.

The Final Office Action appears to rely on the ordinary skill in the art as a reason for making the recited combination. According to MPEP § 2143.01, "a statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill in the art at the time the claimed invention was made' … is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references." (MPEP § 2143) Here, each of the prior art references

No Reasonable Expectation of Success – Lack of Predictability

Additionally, the Office has the burden to show that one of ordinary skill in the art would have recognized that the results of the combination were predictable. Here, there is no reasonable expectation of success in combining the teachings of Rich and Willey since such combination of features is not predicable. In particular, in order to determine "a first data bit of said QPCH … in accordance with processing of one or more signals produced based on said determined receive diversity", a close interaction between the QPCH processing module and receive diversity controller is needed. The receive diversity controller is found at the receiver while the QPCH processor is typically found at a higher level processing module. Consequently,

integrating the claimed features involves more than a mere substitution or combination of common components but instead a system architecture design that facilitates the claimed features. There is no reasonable expectation of success in seeking to make these significant architectural modifications to a communication system.

Claims 19

As to independent Claim 19, the Office Action alleges that Rich in view of Willey teach the claimed limitations.

Applicant traverses this rejection in its entirety.

In rejecting claim 19, the Office Action relies on the reasoning for claims 14-15. However, as noted above in relation to claim 14, neither Rich or Willey teach or suggest "*a controller for determining receive diversity at said receiver by determining a number of a plurality of receiver chains of said receiver for receive diversity based on said determined channel condition, wherein a first data bit of said QPCH received at said receiver is determined in accordance with processing of one or more signals produced based on said determined receive diversity.*" In particular, as discussed above with regard to claim 1, Rich fails to teach a controller for determining receive diversity from a number of a plurality of receiver chains. Rich only teaches selecting between antennas 114 and 116 coupled to a common receiver 126. Rich does not use a 'plurality of receiver chains' as claimed. In Figure 2 and paragraph [0026] of the present invention describes that in RF/IF systems 290A and 290B, each is considered to have a receiver chain. Thus, the claimed "receiver chains" are distinct receivers and not just the antennas 114 and 116 as disclosed by Rich. Consequently, the cited prior art fails to teach a plurality of receiver chains.

Additionally, for the reasons discussed as to claim 14, there is no motivation to combine Rich and Willey, consequently, prima facie obviousness has not been met.

Claim 22

As to independent Claim 22, the Office Action alleges that Rich in view of Willey teach the claimed limitations.

Applicant traverses this rejection in its entirety.

In rejecting claim 22, the Office Action relies on the reasoning for claims 14 and 16. However, as noted above in relation to claim 14, neither Rich or Willey teach or suggest "*determining receive diversity at said receiver of said mobile station when said determined first data bit is a one or an erasure, wherein said determining said receive diversity includes determining a number of said plurality of receiver chains for receive diversity based on a channel condition of a pilot channel received at said receiver.*" In particular, as discussed above with regard to claim 1, Rich fails to teach determining a receive diversity from a number of a plurality of receiver chains. Rich only teaches selecting between antennas 114 and 116 coupled to a common receiver 126. Rich does not use a 'plurality of receiver chains' as claimed. In Figure 2 and paragraph [0026] of the present invention describes that in RF/IF systems 290A and 290B, each is considered to have a receiver chain. Thus, the claimed "receiver chains" are distinct receivers and not just the antennas 114 and 116 as disclosed by Rich. Consequently, the cited prior art fails to teach a plurality of receiver chains.

Additionally, for the reasons discussed as to claim 14, there is no motivation to combine Rich and Willey, consequently, prima facie obviousness has not been met.

Claim 27

As to independent Claim 27, the Office Action alleges that Rich in view of Willey teach the claimed limitations.

Applicant traverses this rejection in its entirety.

In rejecting claim 27, the Office Action relies on the reasoning for claims 14 and 16. However, as noted above in relation to claim 14, neither Rich or Willey teach or suggest "*a receiver for determining a first data bit of said QPCH, wherein said receiver includes a plurality of receiver chains for receive diversity*" and "*a control system for selecting a number of said plurality of receiver chains for receive diversity based on a channel condition of a pilot channel received at said receiver.*" In particular, as discussed above with regard to claim 1, Rich fails to teach a receiver that includes a plurality of receiver chains. Rich only teaches selecting between antennas 114 and 116 coupled to a common receiver 126. Rich does not use a 'plurality of receiver chains' as claimed. In Figure 2 and paragraph [0026] of the present invention describes that in RF/IF systems 290A and 290B, each is considered to have a receiver chain. Thus, the claimed "receiver chains" are distinct receivers and not just the antennas 114 and 116 as disclosed by Rich. Consequently, the cited prior art fails to teach a plurality of receiver chains.

Additionally, for the reasons discussed as to claim 14, there is no motivation to combine Rich and Willey, consequently, prima facie obviousness has not been met.

Claim 32, 34, 36, and 39

As to independent Claims 32, 34, 36, and 39, the Office Action alleges that Rich in view of Willey teach the claimed limitations.

Applicant traverses this rejection in its entirety.

In rejecting claims 32, 34, 36, and 39, the Office Action also relies on the reasoning for claims 14. However, as noted above in relation to claim 14, neither Rich nor Willey teach or suggest a plurality of receiver chains as claimed. In particular, as discussed above with regard to claim 1, Rich fails to teach a receiver that includes a plurality of receiver chains. Rich only teaches selecting between antennas 114 and 116 coupled to a common receiver 126. Rich does not use a 'plurality of receiver chains' as claimed. In Figure 2 and paragraph [0026] of the present invention describes that in RF/IF systems 290A and 290B, each is considered to have a receiver chain. Thus, the claimed "receiver chains" are distinct receivers and not just the antennas 114 and 116 as disclosed by Rich. Consequently, the cited prior art fails to teach a plurality of receiver chains.

Additionally, for the reasons discussed as to claim 14, there is no motivation to combine Rich and Willey, consequently, prima facie obviousness has not been met.

While Applicants disagree that Rich in view of Willey teach the limitations of dependent claims 15-18, 20-21, 24-26, 28, 30-31, 33, 35, 37, 38, and 40-41, Applicants submit that these claims are in condition for allowance due to their dependence of independent claims 14, 19, 22, 27, 32, 34, 36, and 39.

Applicants have reviewed the references made of record and assert that the pending claims are patentable over the references made of record.

In view of the above, therefore, Applicants respectfully requests reconsideration and withdrawal of the rejection of, and/or objection and allowance of claims 1-22, 24-28, and 30-41.

Should any of the above rejections be maintained, Applicants respectfully request that the noted limitations be identified in the cited references with sufficient specificity to allow

Applicant to evaluate the merits of such rejections. In particular, rather than generally citing whole sections or columns, Applicant requests that the each claimed element be specifically identified in the prior art to permit evaluating the references.

CONCLUSION

In light of the remarks/arguments contained herein, Applicant submits that the application is in condition for allowance, for which early action is requested.

Please charge any fees associated with this paper to deposit Account No. 17-0026.

Respectfully submitted,

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